

6. Claims

1. An information processing system comprising  
a storage equipment which includes a logical unit  
5 logically assigned to physical devices and  
an information processing apparatus which sends data  
input/output requests to said storage equipment,  
wherein  
the data input/output requests are transferred  
10 through logical paths serving as communication paths to said  
logical unit,  
wherein  
a cache memory is provided to prefetch and store both  
data in a location to be accessed by one of said data  
15 input/output requests and data in locations following said  
location within said physical devices,  
said information processing apparatus comprising  
a path selection management section which  
manages configurations of a plurality of blocks into which  
20 said logical unit is divided,  
an I/O request allocation section which  
allocates data input/output requests to be transmitted to  
said storage equipment to said logical paths, and  
I/O processing units which transmit said data  
25 input/output requests through said logical paths, according  
to the allocation determined by said I/O request allocation  
section, pursuant to an established protocol,

wherein

    said path selection management section assigns at least one of said logical paths to one of said blocks.

- 5   2. The information processing system according to claim 1, wherein said I/O request allocation section includes
  - a section to detect path fault which detects a faulty path among said logical paths and
  - a section to detect path recovery which detects recovery of the faulty path among said logical paths,
- 10   wherein

    when a faulty path is detected by said section to detect path fault or when the faulty path recovery is detected by said section to detect path recovery, said path selection management section reconfigures said blocks by altering size of said blocks and/or the number of paths assigned to said blocks.

3. The information processing system according to claim 1, wherein said cache memory is included in a disk control unit within said storage equipment.

- 20   4. The information processing system according to claim 1, wherein said I/O processing units are provided with said cache memory.

- 25   5. The information processing system according to claim 1,

wherein said path selection management section includes  
a path management section which creates a path  
management table containing information about said logical  
paths that are recognizable at the start of said information  
5 processing apparatus,

a blocks setup management section which creates an LU  
management table containing information about said logical  
units, referring to said path management table, and  
a block management section which creates a block  
10 management table containing information about said blocks,  
referring to said LU management table,  
wherein

15 said path selection management section divides said  
logical unit into a plurality of blocks and assigns said  
logical paths to said blocks, referring to said block  
management table.

6. An information processing apparatus which sends data  
input/output requests to a storage equipment which includes  
20 a logical unit logically assigned to physical devices  
through logical paths serving as communication paths to said  
logical unit, said information processing apparatus  
comprising

25 a path selection management section which manages  
configurations of a plurality of blocks into which said  
logical unit is divided,

an I/O request allocation section which allocates data

input/output requests to be transmitted to said storage equipment to said logical paths,  
wherein

I/O processing units which transmit said data

5    input/output requests through said logical paths, according to the allocation determined by said I/O request allocation section, pursuant to an established protocol, wherein said path selection management section assigns at least one of said logical paths to one of said blocks.

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7. The information processing apparatus according to claim 6, wherein said storage equipment or said information processing apparatus is provided with a cache memory which prefetches and stores both data in a location to be accessed by one of said data input/output requests and data in locations following said location within said physical devices.

8. The information processing apparatus according to claim 6, said I/O request allocation section includes

20    a section to detect path fault which detects a faulty path among said logical paths and

25    a section to detect path recovery which detects recovery of the faulty path among said logical paths,

wherein

when a faulty path is detected by said section to detect path fault or when the faulty path recovery is detected by

said section to detect path recovery, said path selection management section reconfigures said blocks by altering size of said blocks and/or the number of paths assigned to said blocks.

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9. The information processing apparatus according to claim 6, wherein said I/O processing units are provided with said cache memory.

10 10. The information processing apparatus according to claim 6, wherein said path selection management section includes  
    a path management section which creates a path management table containing information about said logical paths that are recognizable at the start of said information 15 processing apparatus,

    a blocks setup management section which creates an LU management table containing information about said logical units, referring to said path management table, and

    a block management section which creates a block 20 management table containing information about said blocks, referring to said LU management table,  
wherein

    said path selection management section divides said logical unit into a plurality of blocks and assigns said 25 logical paths to said blocks, referring to said block management table.

11. A method for controlling an information processing apparatus which sends data input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices through logical paths serving 5 as communication paths to said logical unit, in which method setting up is performed for configurations of a plurality of blocks into which said logical unit is divided, said method comprising

10 creating a path management table, based on information about said logical paths that are recognizable at the start of said information processing apparatus,

creating an LU management table containing information about said logical units by reference to said path management table,

15 creating a block management table containing information about said blocks by reference to said LU management table,

dividing said logical unit into a plurality of blocks by reference to said block management table, and

20 assigning at least one of said logical paths to one of said blocks.

12. The control method according to claim 11, further comprising

25 reconfiguring said blocks by altering size of said blocks and/or the number of paths assigned to said blocks when a faulty path is detected among said logical paths or

when recovery of the faulty path among said logical paths is detected.

13. A method for controlling an information processing apparatus which sends data input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices and divided into a plurality of blocks through logical paths serving as communication paths to said logical unit, said method comprising

10           selecting, based on one of said data input/output requests, an I/O processing unit assigned to a block where data to be accessed by the data input/output request exists and making the selected I/O processing unit process the data input/output request.

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14. A method for controlling an information processing apparatus which sends data input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices and divided into a plurality of blocks through logical paths serving as communication paths to said logical unit, said method comprising

20           determining whether data to be accessed by one of said data input/output requests is stored on a cache memory, if the data to be accessed by the data input/output request is

25           stored on said cache memory,

          selecting an I/O processing unit that processed the last data input/output request and making said cache memory

work, if the data to be accessed by the data input/output request is not stored on said cache memory,

selecting an I/O processing unit assigned to a block where the data to be accessed by the data input/output request 5 exists and making the selected I/O processing unit process the data input/output request.

15. A computer program to implement functions of an information processing apparatus which sends data 10 input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices through logical paths serving as communication paths to said logical unit, said computer program comprising

computer program code means for creating a path 15 management table, based on information about said logical paths that are recognizable at the start of said information processing apparatus,

computer program code means for creating an LU 20 management table containing information about said logical units by reference to said path management table,

computer program code means for creating a block management table containing information about said blocks by reference to said LU management table,

computer program code means for dividing said logical 25 unit into a plurality of blocks by reference to said block management table, and

computer program code means for assigning at least one

of said logical paths to one of said blocks.

16. The computer program according to claim 15, further comprising

5 computer program code means for reconfiguring said blocks by altering size of said blocks and/or the number of paths assigned to said blocks when a faulty path is detected among said logical paths or when recovery of the faulty path among said logical paths is detected.

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17. A computer program to implement functions of an information processing apparatus which sends data input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices

15 through logical paths serving as communication paths to said logical unit, said computer program comprising

computer program code means for managing configurations of a plurality of blocks into which said logical unit is divided,

20 computer program code means for allocating the data input/output requests to be transmitted to said storage equipment to said logical paths,

computer program code means for transmitting said data input/output requests through said logical paths, according 25 to the allocation determined by said allocation means, pursuant to an established protocol, and

computer program code means for assigning at least one

of said logical paths to one of said blocks.